

What is Claimed:

1. A smart card connector for transmitting signals between a smart card and an external electronic system, wherein the smart card has contacts on one of two major surfaces thereof, the connector comprising:

guiding structure defining a storage space having a first end and an opposed second end, through which second end, the smart card may be inserted, and contact terminals in the storage space for connecting with the contacts of the smart card to be inserted in the storage space; and

an ejecting mechanism provided on the guiding structure and being operable to eject the smart card from the storage space.

2. The smart card connector as set forth in Claim 1, wherein the guiding structure includes a base and a plate affixed to the base to define the storage space, wherein the base is provided with the contact terminals on a major surface thereof facing the plate.

3. The smart card connector as set forth in Claim 2, wherein the contact terminals each have a first end being fixed to the base and a second end being configured as a cantilever beam for contacting the contacts of the smart card to be inserted in the storage space.

4. A smart card connector as set forth in Claim 1, wherein the ejecting mechanism comprises:

an ejection member slidably mounted on the guiding structure and being operable to slide lengthwise of the connector toward and away from the distal end; and

a pivot lever disposed proximate the first end and being rotatably mounted on the guiding structure and arranged to rotate in a plane parallel to the plane of the base, one end of the pivot lever being coupled to the ejection member, the pivot lever having an urging end that extends into the storage space to contact a forward end edge of the smart card to be inserted;

whereby movement of the ejection member operates the urging end of the pivot lever to rotate toward and away from the first end so as to eject the smart card from the storage space.

5. The smart card connector as set forth in Claim 4, wherein the pivot lever is rotatable between a first and a second positions, wherein the pivot lever in the first position ejects the smart card from the storage space, and the pivot lever in the second position prevents the smart card from further insertion into the storage space so as to properly align the contacts with the contact header and to obtain signal alignment of the contacts and the contact header.

6. The smart card connector as set forth in Claim 4, further comprising a sensor disposed proximately the first end and being operable to provide a signal after full insertion of the smart card into the storage space.

7. The smart card connector as set forth in Claim 2, wherein the base is a PC board.

8. The smart card connector as set forth in Claim 2, wherein the plate is made of metal.

9. The smart card connector as set forth in Claim 2, further comprising a guiding plate extending outwards from the plate in a direction opposing the first end for guiding insertion of the smart card.

10. The smart card connector as set forth in Claim 1, wherein the external electronic system is selected from the group consisting of a personal computer, a laptop computer, and a notebook computer each having a motherboard.

11. An ejecting mechanism for a smart card connector having a card guiding structure, comprising:

an ejection member slidably mounted on the guiding structure and being operable to slide along a longitudinal direction thereof;

a pivot lever being rotatably mounted on the smart card connector and arranged to rotate in a plane parallel to a major plane of the smart card connector, one end of the pivot lever being coupled to the ejection

member, the pivot lever having an urging end that extends into the smart card connector;

whereby sliding motion of the ejection member operates the urging end of the pivot lever to rotate between a first position and a second position within the smart card connector.

12. A compound connector device for connecting at least one of a first type of I/O electronic package having first contacts on an end edge thereof, and a second type of I/O electronic package having second contacts on one of two major surfaces thereof, comprising:

a connector section;

first guiding structure extending lengthwise from the connector section and defining at least a first storage space for receiving the first type of I/O electronic package; the connector section having a contact array for connecting with the first contacts of the first type of I/O electronic package to be inserted in the first storage space; and

second guiding structure affixed to the first guiding structure, and defining at least a second storage space for receiving the second type of I/O electronic package, the second guiding structure having a contact terminals thereon for connecting with the second contacts of the second type of I/O electronic package to be inserted in the second storage space.

13. The compound connector device as set forth in Claim 12, wherein the first guiding structure comprises:

a pair of side walls coupled to and extending from the connector section in parallel relation and spaced at an interval substantially equal to a width of the first type of I/O electronic package; and

guiding means longitudinally extending along inner sides of the sidewalls, the guiding means defining the first storage space.

14. The compound connector device as set forth in Claim 13, further comprising:

an ejector provided on the first guiding structure and being operable to eject the first type of I/O electronic package from the first storage space.

15. The compound connector device as set forth in Claim 14, wherein the ejector comprises:

a first package-moving element disposed proximate the first storage space and being operable to move toward and away from the connector section, the first package-moving element having an engagement member that extends into the first storage space to be engaged with a forward end face of the first type of I/O electronic package connected to the contact array; and

first moving means for moving the package-moving element toward and away from the connector section to eject the first type of I/O electronic package from the first storage space.

16. The compound connector device as set forth in Claim 15, wherein the first moving means comprises:

a first ejection member movably mounted on the first guiding structure and being operable to move toward and away from the connector section; and

a first pivot lever rotatably mounted on the first guiding structure and arranged to rotate in a plane parallel to the plane of the first package-moving element, one end of the first pivot lever being coupled to the first package-moving element, and another end of the first pivot lever being coupled to the first ejection member.

17. The compound connector device as set forth in Claim 16, wherein the first package-moving element is a slide plate being movable toward and away from the connector section.

18. The compound connector device as set forth in Claim 14, wherein the second package-moving element is movable between first and second positions, wherein movement toward the first position ejects the second type of I/O electronic package and movement to the second position locates the second type of I/O electronic package in a position in the second storage place so as to properly align the second contacts with the contact terminals.

19. The compound connector device as set forth in Claim 12, wherein the second guiding structure comprises:

a base affixed to the first guiding structure and covering at least a portion of the first guiding structure;

a plate affixed to the base adjacent the first guiding structure; and

the base being provided with the contact terminals on a major surface thereof facing the plate.

20. The compound connector device as set forth in Claim 19, wherein the contact terminals each have a first end being fixed to the base and a second end being configured as a cantilever

beam for contacting the second contacts of the second type of I/O electronic package to be inserted in the second storage space.

21. The compound connector device as set forth in Claim 14, further comprising:

a second ejection member movably mounted on the first or second guiding structure and being operable to move toward and away from the connector section; and

a second package-moving element disposed proximally the second storage space and being movably mounted on the second guiding structure and arranged to move in a plane parallel to the plane of the base, one end of the second package-moving element being coupled to the second ejection member, the second package-moving element having an urging part that extends into the second storage space to contact a forward end edge of the second type of I/O electronic package to be inserted in the second storage space;

whereby movement of the second ejection member operates the urging part of the second package-moving element to move toward and away from the connector section so as to eject the second type of I/O electronic package from the second storage space.

22. The compound connector device as set forth in Claim 21, wherein the second package-moving element is a pivot lever rotatable between a first and a second positions, wherein the pivot lever in the first position ejects the second type of I/O electronic package from the second storage space, and the second pivot lever in the second position prevents the second type of I/O electronic package from further insertion into the second storage space so as to properly align the second contacts with the contact terminals and to obtain signal alignment of the second contacts and the contact terminals.

23. The compound connector device as set forth in Claim 21, further comprising a sensor disposed proximally the second storage space and being operable to provide a signal after full insertion of the second type of I/O electronic package into the second storage space.

24. The compound connector device as set forth in Claim 14, further comprising:

a second ejection member mounted on the first guiding structure and being operable to move toward and away from the connector section; and

a second package-moving element disposed proximately the second storage space and being arranged to move in a plane parallel to the plane of the base, one end of the second package-moving element being coupled to the second ejection member, the second package-moving element having an urging end that extends into the second storage space to contact a forward end edge of the second type of I/O electronic package to be inserted in the second storage space;

whereby movement of the second ejection member operates the urging end of the second package-moving element to move toward and away from the connector section so as to eject the second type of I/O electronic package from the second storage space.

25. The compound connector device as set forth in Claim 24, wherein the second ejection member is slidably mounted on said first guiding structure and further comprises a drive member extending between the first guiding structure and the second guiding structure for moving the package-moving element.

26. The compound connector device as set forth in Claim 25, wherein the second package-moving element includes a pivot lever and the drive member engages one end of the pivot lever.

27. The compound connector device as set forth in Claim 19, wherein the base of the second guiding structure comprises connection means for electrically connecting the second guiding structure to the first guiding structure.

28. The compound connector device as set forth in Claim 27, wherein the connection means is a flexible cable.

29. The compound connector device as set forth in Claim 27, wherein the connection means comprises fixed connections between the contact terminals and the contact array.

30. The compound connector device as set forth in Claim 19, wherein the base is a PC board.

31. The compound connector device as set forth in Claim 19, wherein the plate is made of metal.

32. The compound connector device as set forth in Claim 31, further comprising a guiding plate extending outwards from the plate in a direction opposing the connector section for guiding insertion of the second type of I/O electronic package.
33. The compound connector device as set forth in Claim 12, wherein the first type of I/O electronic package is a memory card.
34. The compound connector device as set forth in Claim 12, wherein the first type of I/O electronic package is a compact flash.
35. The compound connector device as set forth in Claim 12, wherein the second type of I/O electronic package is a smart card.
36. The compound connector device as set forth in Claim 12, wherein the second type of I/O electronic package is a memory stick.
37. The compound connector device as set forth in Claim 12, further comprising transmission means for transmitting signals between the second type of I/O electronic package and an external electronic system.
38. The compound connector device as set forth in Claim 37, wherein the external electronic system is selected from the group consisting of a personal computer, a laptop computer, and a notebook computer each having a motherboard.